SKOLNIK
INDUSTRIES INC

Skolnik Industries, Inc.
4900 S. Kilbourn Avenue
Chicago, IL 60632-4593 USA

773.735.0700 Reception
773.735.7257 Fax
www.skolnik.com

Certification of Compliance / Conformance

7A Drums

Skolnik Industries, Inc. hereby certifies that the product supplied has been marked in accordance with 49 CFR §178.503 Marking of Packaging, fabricated in accordance with 49 CFR §178.504 Standards for Steel Drums and the applicable packaging requirements of 49 CFR §178.350(a), and tested with non-radioactive surrogate materials in accordance with the applicable requirements of 49 CFR §173.465 Type A Packaging Tests. All items are genuine (i.e., not counterfeit) and match the quality, test reports, markings and/or fitness for use required by the Purchase/Contract Order as set forth by:

CUSTOMER:	*VOLUNTEER DRUM*
P.O. #:	*VOL-03195*
EXCEPTIONS TO PURCHASE ORDER:	*None* *(Must have customers written approval)*
SKOLNIK ORDER #:	*0317171*
SKOLNIK QUALITY PROGRAM:	*Skolnik Quality Assurance Manual* *Revision 22*
SKOLNIK DRAWING NUMBER #:	*CQ5508L-VOLU010 REV A6*
UN SPECIFICATION:	*1A2/X430/S* *1A2/Y1.5/175*
DATE OF MANUFACTURE:	*06-20-19*
COMPLIANCE TO PACKAGING REQUIREMENTS OF 49 CFR SECTIONS:	§173.24, §173.24a, §173.403, §173.410, §173.412, §173.415, §173.461-173.465, §178.350, §178.500-178.504, §178.600-178.606, §178.608 (Where applicable to fabricator and tester)
QUANTITY:	*208*
CLOSING INSTRUCTIONS:	*PQ 080 REVISION D*

TRACEABILITY:	**VENDOR**	**P.O.#**	**PART#**	**HEAT / LOT #**
STEEL BODY:	*ESMARK STEEL*	*78886*	*RM10006NQA*	*823E65140*
STEEL BOTTOM:	*ESMARK STEEL*	*78710*	*RM10010NQA*	*953574*
STEEL TOP:	*ESMARK STEEL*	*78887*	*RM10010NQA*	*953574*
RINGS:	*DRUM PARTS MIDWEST*	*78999*	*RBH2212*	*31908580*
BOLTS:	*WURTH SERVICE SUPPLY*	*77264*	*BT5840.6NQA*	*100787399*
NUTS:	*WURTH SERVICE SUPPLY*	*77119*	*NT5800NQA*	*10563250*
GASKETS :	*WOODMAN*	*78880*	*GE5500*	*6/6/19*

DOE's SUSPECT BOLT HEADMARK LIST:
All bolts supplied are genuine, ASTM A 307 Grade A / SAE J429 Grade 1, and not on the DOE's Suspect Bolt Head marking List that covers Grade 5, Grade 8, and Grade A325 fasteners.

Non responsive based on revised scope [redacted]

Quality Assurance Dept., Skolnik Industries, Inc.

June 20, 2019
Date

SKOLNIK

TESTING PERFORMED BY SKOLNIK INDUSTRIES, INC.
TESTING LAB - AKA: "SDCC"
4900 South Kilbourn Avenue Chicago, Illinois 60632

ID NUMBER	TEST NUMBER
18-077	011

UN DRUM QUALIFICATION TEST REPORT

- PERIODIC RE-TESTING -

Qualification Testing and Periodic Retesting for steel drums is performed in accordance with applicable sections of the following: *U.N. Recommendations on the Transport of Dangerous Goods, 49 CFR §173..22 and..24, §178.2, §178.600 through §178.606 and .608 in addition to Skolnik Industries, Inc. Procedure SOP - 11.1.*

U.N. MARKING:	1A2/X430/S 1A2/Y1.5/175	PART NUMBER:	CQ5508 HM5501 / PH5501
		TEST DATE: (Periodic Retesting is required within 12 months from test date)	August 7, 2018

DRUM DESCRIPTION

DRUM TYPE:	Open Head	ROLLING HOOPS:	Three
MATERIAL:	Carbon Steel	RING:	HP Bolt Ring RBH2212
THICKNESS: (top/body/bottom)	1.5 / 1.5 / 1.5 mm	NUT/BOLT TYPE:	5/8" - 11 UNC-2A x 4.00" BT5840 NT5800
CAPACITY:	55 Gallon	CLOSING INSTRUCTIONS:	PQ 080 Rev. D
INSIDE DIAMETER:	22.50"	GASKET:	"D" EPDM GE5500
OVERALL HEIGHT:	34.7"	CHIME TYPE:	Round Chime
PACKAGING GROUP:	I Solids II Liquids	SEAM CONSTRUCTION:	Overlap Weld
SPECIFIC GRAVITY:	1.5	FITTINGS:	2" & 3/4" Rieke in Cover PR2041 PR3041- EPDM Gasket 2" TS in Body PT2000 - Buna Gasket
SOLIDS GROSS WEIGHT:	430 kg		

TESTING

DROP TEST - SOLIDS — 49 CFR §178.603

CONTENTS USED:	Sand and Steel Plates
CAPACITY FILLED TO:	95%
SOLID DROP HEIGHT:	1.8 m
RESULTS, TEST 1:	PASS 3 samples dropped on bottom chime
RESULTS, TEST 2:	PASS 3 samples dropped onto ring at 45 degrees

DROP TEST - LIQUIDS — 49 CFR §178.603

CONTENTS USED:	Water
CAPACITY FILLED TO:	98%
LIQUID DROP HEIGHT:	1.5 m
RESULTS, TEST 1:	PASS 3 samples dropped on bottom chime
RESULTS, TEST 2:	PASS 3 samples dropped onto ring at 45 degrees

STACKING TEST - SOLIDS — 49 CFR §178.606

CONTENTS USED:	Sand and Steel Plates
CAPACITY FILLED TO:	95%
TEST WEIGHT:	2122 kg 3 samples maintained for 24 hours
RESULTS:	PASS

STACKING TEST - LIQUIDS — 49 CFR §178.606

CONTENTS USED:	Water
CAPACITY FILLED TO:	98%
TEST WEIGHT:	1819 kg 3 samples maintained for 24 hours
RESULTS:	PASS

LEAKPROOFNESS TEST — 49 CFR §178.604

TEST PRESSURE:	34.5 kPa 3 samples held for (5) minutes
RESULTS:	PASS

VIBRATION STANDARD — 49 CFR §178.608

The vibration standard criteria as set forth in 49 CFR § 178.606 was successfully reviewed upon design qualification testing for this type of container. Past performance has indicated no failures.

HYDROSTATIC TEST — 49 CFR §178.605

TEST PRESSURE:	175 kPa 3 samples held for (5) minutes
RESULTS:	PASS

TEST PERSONNEL: Non responsive based on revised scope

APPROVAL: Non responsive based on revised scope

Skolnik Industries, Inc.
4900 S. Kilbourn Avenue
Chicago, IL 60632-4693 USA
773.736.0700

SKOLNIK
Drums of Steel

PART NUMBER
CQ5508

TESTING PERFORMED BY SKOLNIK INDUSTRIES, INC.
TESTING LAB - AKA: "SDCC"
4900 S Kilbourn Avenue Chicago, Illinois 60632

ID NUMBER
18-078

TYPE A TEST REPORT

DRUM DESCRIPTION

DRAWING NUMBER:	22OH-TEST REV A8	MATERIAL:	Carbon Steel
UN RATING SOLIDS:	1A2 / X430 / S	UN RATING LIQUIDS:	1A2/Y1.5/175
DRUM TYPE:	Open Head	THICKNESS:	0.055" - 0.063"(1.5mm)
RING:	RBH2212 Bolt Ring 12 GA	CAPACITY:	55 Gallon
NUT/BOLT TYPE:	5/8" - 11 UNC x 4.0"	INSIDE DIAMETER:	22.50"
GASKET:	GE5500 ("D" EPDM)	OVERALL HEIGHT:	34.7"
CLOSING INSTRUCTIONS:	PQ 080 Rev. D	ROLLING HOOPS:	3
FITTINGS:	Cover - 2" & 3/4" Rieke EPDM Body - 2" TriSure Buna	CHIME TYPE:	Round Chime
NUCLEAR VENT:	None	SEAM CONSTRUCTION:	Overlap Weld

CONTENTS USED FOR TESTING

TESTING IS PERFORMED USING SURROGATE CONTENTS

SOLIDS (SMALL PARTICLE SIZE):	Sodium Bicarbonate, Sand, Flour, Fluorescein Dye
SOLIDS (HEAVY BULKY MATERIAL):	Steel Scrap, Inner Drum Filled with Steel Scrap
GROSS MASS OF TESTED DRUM:	Drum #1 963 lbs, Drum #2 1010 lbs

PRE-TESTING INSPECTION

EACH DRUM SHALL BE INSPECTED FOR CONFORMANCE TO 49CFR § 173.462 AND SOP 11.2 SECTION 4.0

DOES EACH DRUM CONFORM TO THE REQUIRED PRE-TESTING INSPECTION? Yes

This report ensures that Skolnik Industries, Inc. has successfully performed the Type A Packaging Tests as described in 49 CFR § 173.465 using surrogate contents and that all requirements of 49 CFR § 173.462 were met prior to testing. This packaging is capable of withstanding, without rupture or leakage, the vibration standard in 49 CFR § 178.608 (49 CFR § 173.410(f)). This packaging has been tested according to 49 CFR § 178.605 to support compliance with 49 CFR § 173.412(f), results are listed within this report.

Skolnik Industries, Inc. does not, and cannot, certify this packaging as a DOT 7A Type A Package, it is the responsibility of the packager / shipper to certify that the package meets all of the applicable requirements.

Customer must be aware of subsequent Type A requirements including, but not limited to the following:
49 CFR §172.310 Class 7 (radioactive) materials.
49 CFR §178.2 Applicability and responsibility.
49 CFR §178.350 Specification 7A; general packaging, Type A.

Additional information on this subject can be found within DOT clarification letter Ref. No. 05-0074 and DOE Office of Transportation Regulatory and Legislative Development Highlights Issue Number: EM/OT-001 dated November 2005.

PERFORMED BY: Non responsive based on revised scope
SIGNATURE

Non responsive based on revised scope
PRINTED NAME / TITLE

APPROVED BY: Non responsive based on revised scope
SIGNATURE

Non responsive based on revised scope
PRINTED NAME / TITLE

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SKOLNIK
Drums of Steel

PART NUMBER
CQ5508

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TESTING LAB - AKA: "SDCC"
4900 S Kilbourn Avenue Chicago, Illinois 60632

ID NUMBER
18-078

TYPE A TEST REPORT

TYPE A PACKAGING TESTS 49CFR § 173.465

DRUM #: 1

DATE: 8/8/2018 TIME: 6:20 AM TEST SEQUENCE #: 1

SPRAY DURATION: 1 Hour

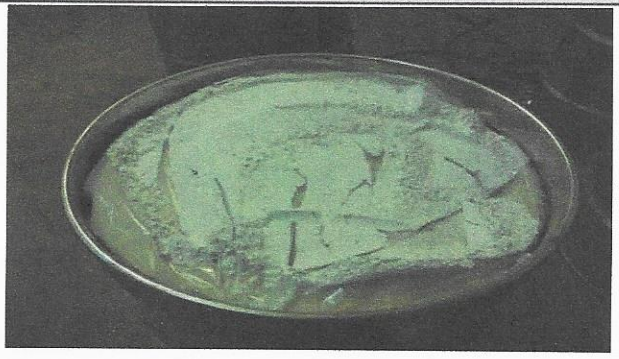
SOAK DURATION: 2 Hours

RESULT: No loss or dispersal of contents, no signs of water intrusion - PASS

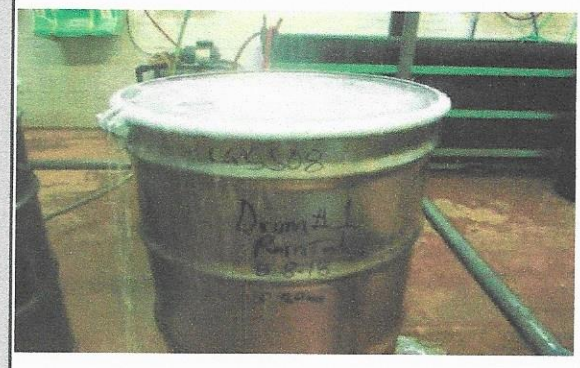
WATER SPRAY TEST
49CFR § 173.465(b)

TEST RESULT PHOTOGRAPHS

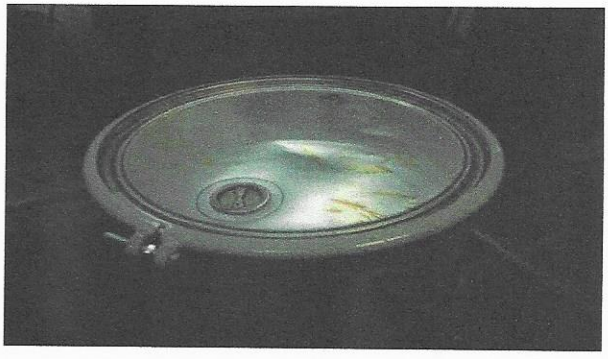
The contents of Drum #1:
Heavy Bulky Material: Steel Scrap, Inner Drum Filled with Steel Scrap
Small Particle Size: Sodium Bicarbonate, Sand, Flour, Fluorescein Dye



Drum #1 was closed per Skolnik PQ 080.
The bolt was torqued to 60 ft-lb, resulting in a ring gap of 0.247".
The 3/4" Rieke fitting was torqued to 15 ft-lb.
The 2" Rieke was torqued to 30 ft-lb.
The 2" TS Body Fitting was torqued to 20 ft-lb.



Drum #1 was sprayed with water for one hour to simulate exposure to rainfall at a rate of at least 2" per hour.



Drum #1 was allowed to set for a period of 2 hours so that the water soaked in to the maximum extent. The cover was removed and the interior was inspected for signs of water. No interior signs of water, and no loss of contents observed.

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ID NUMBER
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TYPE A TEST REPORT

TYPE A PACKAGING TESTS 49CFR § 173.465

DRUM #: 1

FREE DROP TEST (FISSILE)
49CFR § 173.465(c)(2)

DATE: 8/8/2018 TIME: 9:50 AM TEST SEQUENCE #: 3

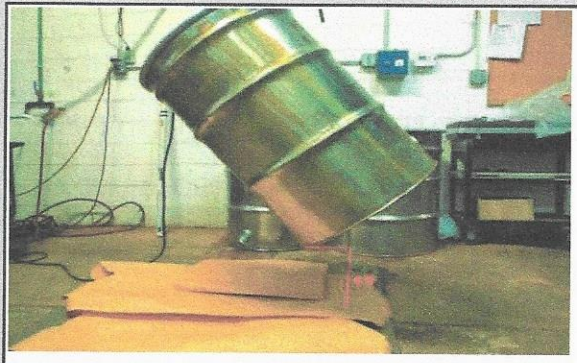
DROP HEIGHT: 1 foot (0.3 m)

RESULT: No loss or dispersal of contents - PASS

MAXIMUM TOP CRUSH PATTERN: 8.0" x 0.5"

MAXIMUM BOTTOM CRUSH PATTERN: 9.0" x 1.0"

TEST RESULT PHOTOGRAPHS



Drum #1 was dropped on the rim of each of the four quadrants of the top and bottom, from a height of 1 foot, onto the drop target. The drop target specifications are documented in Skolnik Drawing, Drop Target Rev A.

The four bottom drops resulted in visible and measurable damage to the bottom of the drum. A crush pattern with the maximum dimensions of 9.0" x 1.0" was observed.

The four top drops resulted in visible and measurable damage to the bottom of the drum. A crush pattern with the maximum dimensions of 8.0" x 0.5" was observed.

After the eight fissile drops, the drum was inspected with an ultra violet light. No loss or dispersal of content was observed.

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ID NUMBER
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TYPE A TEST REPORT

TYPE A PACKAGING TESTS 49CFR § 173.465

DRUM #: 1

DATE: 8/8/2018 TIME: 9:42 AM TEST SEQUENCE #: 2

PENETRATION BAR VERIFICATION: DIAMETER: 1.252" MASS: 16 lbs

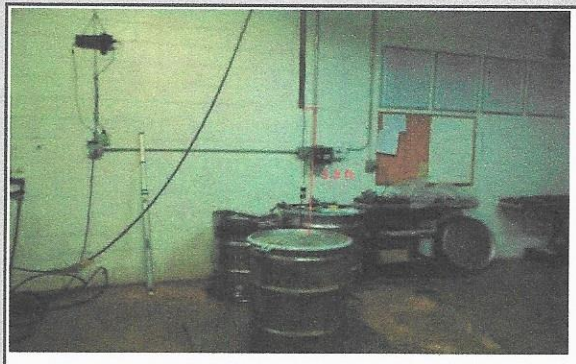
49CFR § 173.465(e)(1) 1.25(in) 49CFR § 173.465(e)(1) 13.2(lbs)

DROP HEIGHT: 3.3 feet (1.0 m) from the lowest point of the penetration bar to the point of impact

RESULT: No loss or dispersal of contents - PASS

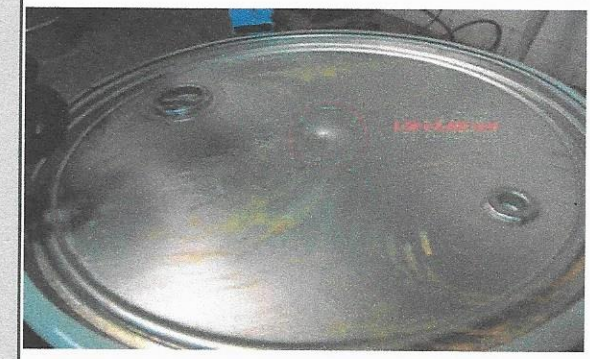
PENETRATION TEST
49CFR § 173.465(e)

TEST RESULT PHOTOGRAPHS

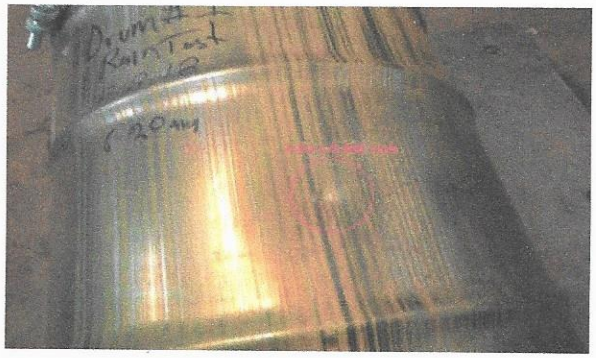


Drum #1 was placed onto the drop target, the penetration bar was hoisted to a height of 3.3 feet and dropped onto the drum in two locations.

The drop target specifications are documented in Skolnik Drawing, Drop Target. The penetration bar specifications are documented in Skolnik Drawing, TL 850-01, Rev. A.



Drop 1 was on the cover and created a dent that was 1.50" in diameter and 0.200" deep. The drum was inspected with an ultra violet light. No loss or dispersal of content was observed.



Drop 2 was on the body of the drum and created a dent that was 4.00" in diameter and 0.200" deep. The drum was inspected with an ultra violet light. No loss or dispersal of content was observed.

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ID NUMBER
18-078

TYPE A TEST REPORT

TYPE A PACKAGING TESTS 49CFR § 173.465

HYDROSTATIC PRESSURE TEST
49CFR § 178.605

DRUM #: 3

DATE: 8/6/2018 TIME: 9:00 AM TEST SEQUENCE #: 1

TEST PRESSURE: 175 kPa (26 PSI)

DURATION: 5 minutes once the test pressure is achieved.

RESULT: No loss or dispersal of contents - PASS

TEST RESULT PHOTOGRAPHS

Drum #3 was closed per Skolnik PQ 080. The bolt was torqued to 60 ft-lb, resulting in a ring gap of 0.221". The 2" Rieke was torqued to 30 ft-lb, the 2" TS fitting torqued to 20 ft-lb.

Hydrostatic testing was performed in accordance with 49CFR 178.605 to support compliance with 49CFR 173.412(f). The drum was filled with water to a pressure of 175 kPa and held at pressure for a duration of 5 minutes.

No loss or dispersal of content was observed.

MEASURING & TEST EQUIPMENT

DESCRIPTION	ID/SERIAL NUMBER	DUE DATE
6" Caliper	14511671	Jul-2019
Pressure Gauge	8103005002	May-2019
Torque Wrench	5140896176	May-2019
Penetration Bar	TL-850-01	May-2019
Scale	THD6B02407	Dec-2018
Scale	140230	Dec-2018

SKOLNIK
INDUSTRIES, INC.

CLOSURE INSTRUCTIONS

PQ 080 – Closure Instructions
Revision: D
Revision Date: 1 January 2011
(See Important Note 1)

In compliance with DOT 49 CFR §178.2 (c), persons shipping Skolnik drums must comply with the following closure instructions.

BOLT RING CLOSURE FOR OPEN HEAD DRUMS

1. **CHECK GASKET –** to ensure cover gasket is properly fitted into cover groove (see Fig. 1 or 2).
2. **PLACE COVER ON DRUM –** being careful to properly seat gasket all around curl (see Fig. 3).
3. **POSITION & SEAT RING –** with lugs downward. Ensure the inner channel of the closure ring engages entire drum curl and cover (see Fig. 4). Apply downward pressure on cover. Use a non-sparking dead-blow mallet to further seat cover and drum curl into the inner channel of the ring.
4. **INSERT BOLT –** through the unthreaded lug of the ring. Assemble the locking hex nut onto the threaded end of the bolt and tighten into the threaded lug (see Fig. 5). Close the ring to an initial gap of about 1/2".
5. **TIGHTEN THE BOLT –** with a calibrated torque wrench while using downward pressure on the cover and hammering the outside of the ring with a non-sparking dead-blow mallet to further seat the ring. Continue tightening and hammering the ring until the torque stabilizes at 55 - 60 ft-lbs and does not decrease when further hammering on the ring circumference is performed. Ring ends must not touch. (Effective 25 September, 2006 and in accordance with CFR 178.2(c), we have revised this procedure to use torque as the most effective closure requirement.)
6. **LOCK RING –** by tightening the nut against the unthreaded lug (see Fig. 6).

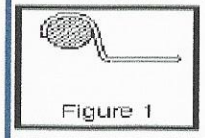
Figure 1

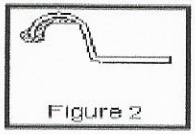
Figure 2

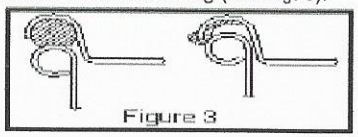
Figure 3

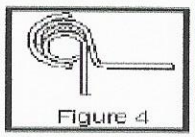
Figure 4

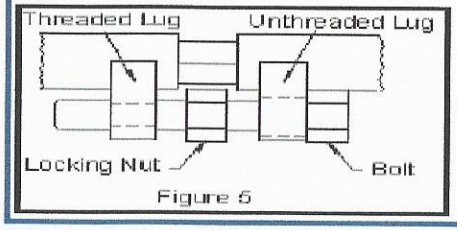

Figure 5

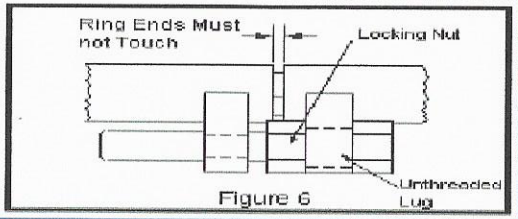

Figure 6

OPEN HEAD DRUM - LEVERLOCK CLOSURE

1. **CHECK GASKET** – to ensure cover gasket is properly fitted into cover groove (see Fig. 1 or 2).
2. **PLACE COVER ON DRUM** – being careful to properly seat gasket around curl (see Fig 3).
3. **OPEN LEVERLOCK** – and place expanded ring on to the drum cover with the vertical-skirt hugging the drum body (see Fig. 7).
4. **CLOSE LEVERLOCK** – by slowly and cautiously pulling the LEVERLOCK so that the outer ring engages the cover / body juncture. Downward pressure along with tapping the outside of the ring may assist in an even closure (see Fig. 8).
5. **ENGAGE LOCK** – to complete closure.

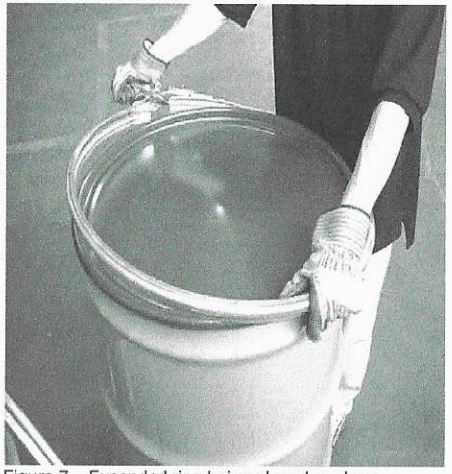
Figure 7 – Expanded ring being placed on drum

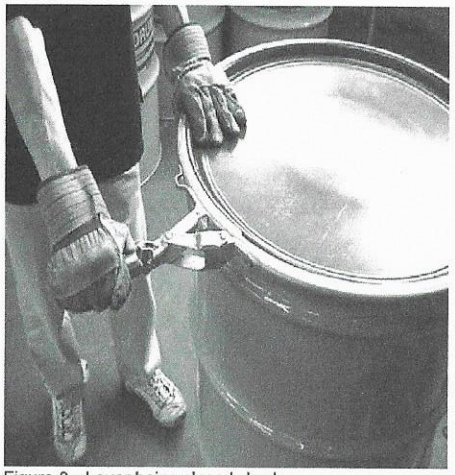
Figure 8 - Lever being closed slowly

DRUMS WITH FITTINGS

1. **CHECK GASKETS** – and ensure gasket is properly seated on plug.
2. **TIGHTEN** – to specifications listed in the table, and do not cross thread.

PLUG TYPE	Tri-Sure style			Rieke style (Plastic)	Rieke style (Steel)	
GASKET TYPES	Buna	Poly or Teflon	PE / PP (Composite Drums)	—	Poly	All Others
¾" PLUG	12 ft-lbs	20 ft-lbs	—	9 ft-lbs	20 ft-lbs	15 ft-lbs
2" PLUG	20 ft-lbs	30 ft-lbs	10 ft-lbs	20 ft-lbs	40 ft-lbs	30 ft-lbs

IMPORTANT NOTES:

1. Closure Instructions Rev. D are valid to close all product tested with and / or manufactured under Closure Instructions Rev C. & Rev. B. Revisions are clerical and do not effect the actual closing of product.
2. A drum is properly closed only when all steps are completed in the matter and sequence indicated. If difficulties are encountered, do not ship the drum call Skolnik for further instruction.
3. Under the applicable DOT regulations, any changes made to the method of closure or closure components constitute a change in the design type of this packaging, and invalidates the certification.
4. After filling and prior to transport, the shipper should verify the torque of all closures to determine if the effects of heating and cooling or gasket relaxation have resulted in the need to re-tighten the closure.
5. Drums (other than the composites) are tested at room temperature.

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